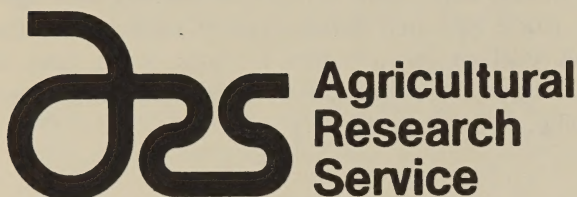


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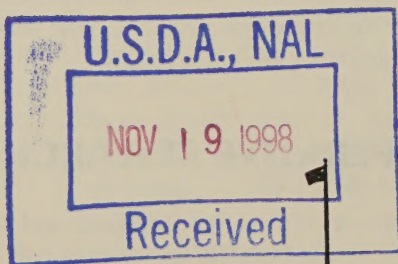
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United States Department of Agriculture



INSECTS AFFECTING MAN & ANIMALS RESEARCH LABORATORY

1600 S.W. 23rd Drive • Post Office Box 14565
Gainesville, Florida 32604
(904) 374-5900 • FTS: 947-7900



The Insects Affecting Man and Animals Research Laboratory (IAMARL) of the Agricultural Research Service (ARS), U.S. Department of Agriculture, traces its beginning to Orlando, Florida, where a research laboratory was established in 1942 by the USDA to develop methods and materials for protection of military personnel against insects, ticks and mites of medical importance. In 1961, the Secretaries of Defense and Agriculture signed a Memorandum of Understanding to continue the research program at the Orlando Laboratory. In 1963, in keeping with Agricultural Research Service policy of the time, the IAMARL moved into new facilities on 11 acres of land donated by the University of Florida at Gainesville.

MISSION

The mission of the IAMARL is to develop knowledge and technology for control of insects, ticks and mites of medical and veterinary importance. This mission is primarily in support of the USDA and the Department of Defense, but results of research are also applicable to programs of international agencies such as the World Health Organization, the International Atomic Energy Agency, Agency for International Development, as well as a wide variety of national, state and local government agencies, private industry and the general public. To accomplish this mission, the IAMARL employs a staff of 25 to 35 scientists and 50 or more technicians and other support personnel. This mission is further supported by about 45,000 square feet of heated and air conditioned space in modern facilities and state-of-the-art equipment for acquisition, management, analysis and documentation of research results.

COOPERATIVE RESEARCH

Successful research accomplishment and technology transfer by the IAMARL has been due to multidisciplinary team research and a wide range of cooperative efforts and interactions with other government organizations and individual researchers, as well as pest and vector management programs on a

world-wide basis. Current cooperators include the U.S. Department of Defense, World Health Organization, International Atomic Energy Agency, Departments of Agriculture in Brazil, Animal and Plant Health Inspection Service, Tennessee Valley Authority, University of Florida, McNeese State University, Florida State Board of Health, California Department of Agriculture, Maag Agrochemicals, Mosquito Control Districts in Florida, National and Florida Pest Control Associations and a number of other ARS laboratories, including the Insect Chemical Ecology Laboratory, Insects Attractant, Behavior and Basic Biology Research Laboratory, Knipling-Bushland U.S. Livestock Insects Laboratory, Veterinary Toxicology and Entomology Laboratory, Livestock Insects Laboratory, Midwest Livestock Insects Research Laboratory, Biological Control of Weeds Laboratory (support of imported fire ant research in Argentina) and the European Parasite Laboratory.

ACCOMPLISHMENTS

The research accomplishments of IAMARL have been documented in more than 2,000 publications in scientific journals, conference proceedings, book chapters, handbooks and other documents. Pertinent information regarding these publications is managed in a computerized database management system. Thus, reprints are easily retrievable by author, year and key words in titles and abstracts. Reprints or lists of IAMARL publications are furnished upon request.

The IAMARL has an outstanding record of chemical control research and development. Early research with chlorinated hydrocarbon insecticides was soon replaced with the development of currently used pesticides including organophosphates, carbamates, pyrethroids, insect growth regulators and microbial insecticides. Additional chemical control research accomplishments by IAMARL scientists are: (1) development of the ultra-low volume (ULV) method of insecticide application for use in mosquito pest and vector control programs worldwide; (2) synthesis and development of deet, the principle active ingredient in essentially all insect repellents (in cooperation with an ARS chemist at Beltsville, Maryland; (3) development of a bait system for control of

imported fire ants, which is the basis for all commercial formulations; (4) development of a clothing treatment for personal protection against arthropod pests and vectors; and (5) discovery of a new class of chemical toxicants for use in baits to control imported fire ants, cockroaches and other insects.

Other outstanding research accomplishments by scientists of the IAMARL include: (1) identification of a sex and aggregation pheromone of the housefly that was commercialized as an enhancement for bait formulations; (2) housefly and stable fly control by inundative release of pupal parasites; (3) demonstration of the effectiveness of sterile male releases against natural populations of tsetse flies, the stable fly and two species of mosquitoes; (4) housefly control with chemosterilant baits; (5) development of genetic sexing strains of two species of mosquitoes, the housefly and the stable fly; (6) discovery that lactic acid is one component in human emanations which attract mosquitoes; (7) use of a predator species of mosquito for control of the yellow fever mosquito; (8) GC analysis of cuticular hydrocarbons of insects for their identification; (9) identification of imported fire ant pheromones that have potential use in species-specific bait systems; (10) discovery of sibling species of an anopheline mosquito in the southern U.S.; (11) mass rearing methodologies for mosquitoes and flies that could be used in sterile insect release control programs; (12) integrated management strategies for cockroaches and fleas; (13) control of populations of peridomestic cockroaches with parasites; and (14) development of comprehensive computer software for simulation of population dynamics, disease transmission and control of insects and ticks.

MANAGEMENT & SCIENTIFIC STAFF

G.A. Mount, Laboratory Director, (904) 374-5900

F.J. Santana, (Captain, U.S. Navy) Liaison Officer,
Armed Forces Pest Management Board, 374-5950

RESEARCH UNITS

MODELING & BIOENGINEERING

G.A. Mount, Research Leader, (904) 374-5900

D.G. Haile, Lead Scientist/Engineer, 374-5928

D.A. Focks, Research Entomologist, 374-5976

The objective of this Research Unit is to develop comprehensive, weather-based computer simulation models for a broad range of pest and vector species of insects, ticks and mites that attack man and animals. Computer models include population growth, management technologies and disease transmission. Exhaustive simulation research promotes an increased understanding of population dynamics and disease transmission. Computer simulations are also used to develop integrated management strategies for target species.

IMPORTED FIRE ANT & HOUSEHOLD INSECTS

R.S. Patterson, Research Leader, (904) 374-5910

C.S. Lofgren, Research Entomologist, 374-5920

W.A. Banks, Research Entomologist, 374-5780

B.M. Glancey, Research Entomologist, 374-5790

R.K. Vander Meer, Research Chemist, 374-5918

R.J. Brenner, Research Entomologist, 374-5937

D.F. Williams, Research Entomologist, 374-5913

D.P. Jouvenaz, Research Entomologist, 374-5989

D.P. Wojcik, Research Entomologist, 374-5986

P.E. Hernandez, Research Associate, 374-5921

P.G. Koehler, Entomologist (U.F.), 374-5957

R.W. Wadleigh, Entomologist (U.F.), 374-5908

The research goals of this Unit are the development of control technologies and integrated manage-

ment strategies for imported fire ants, cockroaches and fleas. Areas of research include pesticide control, bait systems, repellents, toxicology, pheromone chemistry and behavior, biological control, behavior, dispersal, sociobiology, bioecology and population dynamics. The research capability of this Unit is enhanced by a cooperative effort with the Institute of Food and Agricultural Sciences, University of Florida.

MOSQUITO & FLY

D.R. Barnard, Research Leader, (904) 374-5930
P.B. Morgan, Research Entomologist, 374-5969
A.H. Undeen, Research Entomologist, 374-5966
R.E. McLaughlin, Research Entomologist, 374-5906
C.E. Schreck, Research Entomologist, 374-5968
D.L. Kline, Research Entomologist, 374-5933
J.A. Hogsette, Research Entomologist, 374-5912
J.C. Lord, Research Associate, 374-5961
J.J. Becnel, Biologist, 374-5938
T. Fukuda, Microbiologist, 374-5964
J.R. Wood, Entomologist (U.F.), 374-5938

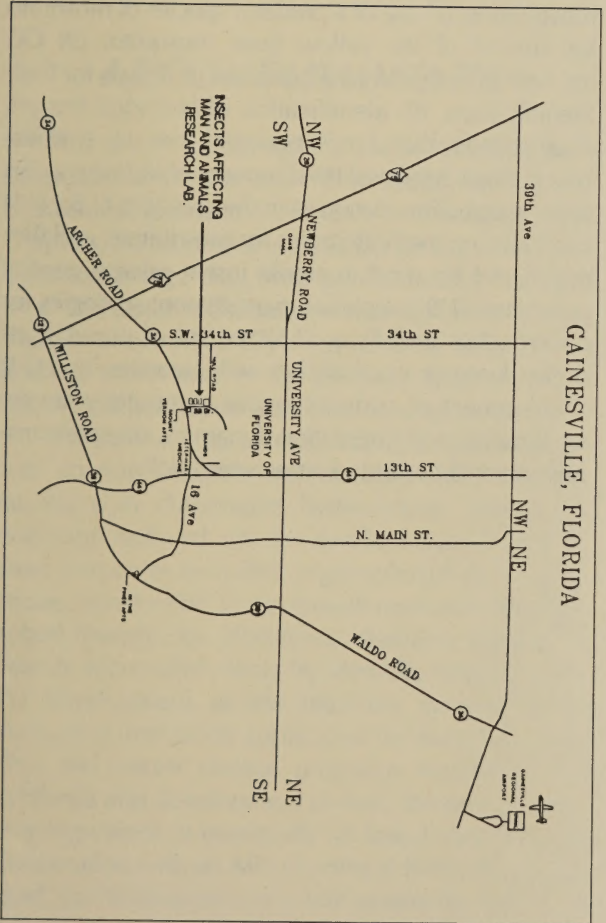
The research emphasis for this Unit is on development of control technologies and integrated management strategies for mosquitoes, other biting gnats and flies. Principle areas of research include pesticides, repellents, attractants, insect pathology, biological control, behavior, dispersal, bioecology, host management and population dynamics.

GENETICS & MOLECULAR BIOLOGY

J.A. Seawright, Research Leader, (904) 374-5940
D.A. Carlson, Research Chemist, 374-5929
S.K. Narang, Research Geneticist, 374-5988
A.F. Cockburn, Research Geneticist, 374-5873
B.J. Smittle, Research Entomologist, 374-5935
P.E. Kaiser, Entomologist, 374-5998

This Unit synthesizes new technologies for either control or eradication of arthropods of medical and veterinary importance through the study of genetics and molecular biology. Areas of research include population genetics, genetic control, genetic engineering and biochemistry. The manipulation of

biochemical and genetic mechanisms could lead to more efficient, pollution-free methods for the control of arthropods.



RESEARCH THRUSTS OF THE INSECTS AFFECTING MAN & ANIMALS RESEARCH LABORATORY

- Modeling and computer simulation
- Population genetics
- Genetic engineering
- Genetic control
- Pheromones
- Chemotaxonomy
- Behavior, bioecology and population dynamics
- Biological control with pathogens, parasites and predators
- Mosquito host management
- Repellents
- Attractants
- Pesticide control
- Pesticide resistance detection

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October 1988